

# IVS – Connect more servers - Site and Domain configuration

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# 1. Introduction, important information

This guide details the settings and options for connecting servers. For a complete overview of the system architecture and configuration, please refer to the *IVS Installation Manual* documentation.

## 2. Intellio system

The two most important components of the Intellio Video System are the network and the hardware that makes up the system. If either of these fails, the system's operation can easily become unstable unless precautions are taken to prevent such situations.

If the system is redundant, a hardware failure will not cause the system to crash. Deploying a multi-server Site offers several advantages, such as automatic camera takeover and automatic load balancing.

### 2.1. Camera takeover

This is an automated process where the system detects failed servers and reassigns the cameras associated with those servers to another server or servers within the Site. This ensures uninterrupted data recording, which is arguably the most critical requirement for a camera system. If the failed server becomes operational again, the system automatically detects this and restores the original state.

For this feature to work, at least one available network path is required between the cameras and the respective servers, as well as sufficient network bandwidth to maintain communication with the cameras. It is advisable to design systems to continue functioning seamlessly even during server failures.

### Camera locking

There are situations where certain cameras need to remain assigned to a specific server at all times, regardless of whether the server is operational (e.g., server-side license plate recognition). In such cases, cameras can be excluded from the automatic takeover process as follows:

- Select the specific device on the **System Configuration / Devices** page.
- Check the **Server Name** column to confirm that the device is registered to the server you want to lock it to.
- If necessary, use the **Register** button to reassign the camera to the desired server.
- Right-click on the device and select **Lock Device** from the context menu.

To unlock the device, follow the same steps.

## 2.2. Load balancing

The primary source of server load is the storage of images transmitted by cameras and handling various requests from connected clients. Load balancing helps distribute storage-related tasks across multiple servers for optimal resource utilization, improving reliability and reducing response time.

With this feature, the system calculates the storage load on servers based on the size of the recordings from the cameras. If one server stores significantly more data than another, load balancing reduces the load on that server by redirecting certain cameras to other servers.

This process has no negative impact on playback. While the reassignment causes a brief disconnection between the camera and the server for a few seconds, the duration and frequency of the reassignment can be configured to minimize potential issues. The best practice is to schedule load balancing during the least busy periods.

Before enabling the feature, it is recommended to review the statistical report that serves as the basis for the reassignment decisions. You can do this as follows:

- On the **System Configuration / Devices / Load Balancing / Statistics** page, set the query period.
- Press the **Query** button.

To configure load balancing, follow these steps:

- Check the **Enable Load Balancing** checkbox.
- Set the **Calculate based on the given past days**, the **Minimal days between registerings**, and the **Start/End time of load balancing** (in hours) (the time window within which reassignment can occur).
- Select the days when load balancing is allowed.
- Choose the cameras eligible for reassignment.
- Press the **Save** button.

Once configured, during the specified interval, the algorithm analyzes server loads and redistributes the selected cameras as needed to ensure an even distribution of load across all servers.

## 3. Site

The core unit of the architecture is the server, which serves as the central component of the system. It communicates with cameras, records video footage, and receives incoming events. All data is stored in the server's configured buffers. The server software runs as a Windows service in the background on each server computer, meaning it starts automatically when the computer boots and operates unnoticed.

The Site is responsible for maintaining data consistency between servers. One server in the Site acts as the Master server, controlling data synchronization, while the other servers function as Slave servers.

For a multi-server Site, ensure a high-speed LAN connection (minimum 1Gbps) to support continuous communication and data synchronization between servers.

The Site settings can be accessed under **System Configuration / System / Site**, which includes three sections: **Site**, **Servers**, and **Clients**.

To link multiple servers into a single Site, each server must have the **IVS-Site** module. To check a server's current modules and licenses, use the **Intellio Activation Tool** or review the **License** column on the **System Configuration / System / Site / Servers** page.

**Important:** *A maximum of 4 servers is supported within a single Site!*

### 3.1. Add Server to the Site

An existing Site (a single-server system is also considered a Site, though it does not require a Site module) can be expanded by adding additional servers through the **System Configuration / System / Site / Servers** page. The new server is identified by its network IP address and communication port number. While it is possible to use the server name instead of the IP address, specifying the IP address is recommended to avoid potential DNS resolution issues in the future. Any user account with full administrator privileges on the target server can be used. For fresh installations, the default credentials are Administrator/admin. Steps to add a server:

- Install the same server version on the new server as the one running on the existing Site and activate the product key.
- On the existing Site, click the **Add** button in **System Configuration / System / Site / Servers**.
- Enter the required parameters (**IP Address, Port, Login Name, Password**).
- Click **OK**.

**Important:** *When a new server is added, its existing settings will be lost, and it will adopt the master server's configuration. Therefore, it is not recommended to configure servers separately before linking them into a Site. Instead, first set up the Site with all servers, then register devices, cameras, and other components.*

*A freshly installed (unconfigured) server can be used to expand an existing Site.*

*All servers within a Site must run the same version of the server software; otherwise, the Site connection will not be established.*

For multi-server Sites, synchronizing the server clocks is crucial. The automatic **Time synchronization between servers** option can be enabled in **System Configuration / System / Site**, ensuring that all servers in the Site remain synchronized. If time synchronization is managed via an NTP server or another method, it is recommended to disable the built-in time sync option.

## 3.2. Change Master Server

The master server role can be reassigned at any time, and in some cases, it may be necessary—such as when the original master server becomes inoperable.

**Important:** *System settings can only be modified through the master server. If the master server is unavailable, system settings cannot be changed!*

On the **System Configuration / System / Site / Servers** page, the current master server and the status of all servers are displayed. To change the master server role, select the replacement server, then press the **Mark as Master** button.

The status change may take a few seconds, during which the servers temporarily stop communicating with each other.

## 3.3. Modifying Server settings

To modify a server's settings, select the server, then press the **Edit** button or double-click on the server.

By default, the server name is the same as the computer's hostname. The address can also be set as the server name since the DNS server translates the hostname to the device's unique IP address on the network. However, it is recommended to use the IP address (numeric format) to avoid potential issues if the DNS server fails.

From a networking perspective, servers may occasionally require custom configurations instead of the default settings. Below is a brief description of the configurable parameters:

- **Name** – Identifies the server (used for recognition only).
- **Description** – Helps with easier identification.
- **Address** – The server's network address, which Intellio Server will use. If the computer has multiple IP addresses, specify the one accessible to other servers.
- **Port** – The server's communication port (default: **53540**).
- **External Address & Port** – Necessary if the Site should be accessible externally (e.g., via the Internet). A multi-server Site is accessible externally only if at least one server has an external address and port configured. Even in this case, only cameras registered to that server can be viewed remotely, but the entire camera list of the Site remains available. If multiple servers need external access, each server should have a unique TCP port, and proper port forwarding should be configured on the network.

**Important:** *Computers within the same domain can only detect each other if each server has an external address set!*

### 3.4. Deleting a server

Servers can be removed from a Site using the **Delete** button, while following these rules:

- The server must not have any registered cameras.
- The server cannot be the Master server.
- The user cannot remove the server they are currently logged into.

**Important:** *The total number of camera licenses in the Site will decrease by the number of licenses assigned to the removed server!*

If you plan to reuse the removed server elsewhere—either as a standalone server or as part of a new Site - it is highly recommended to perform a full reinstallation of the IVS server. This ensures that all configuration files are reset to a clean, default state.

### 3.5. Client connections

A Site or even a single server can support multiple simultaneous client connections. Naturally, the more clients connect to a server, the higher its load, as it must handle additional data traffic.

For optimal system performance, client connections should be evenly distributed across all Site servers. To achieve this, enable automatic address synchronization in the connection settings (see the **User Guide** for details). If the settings are correctly configured, the client will automatically connect to a random Site server upon login, ensuring balanced server load distribution.

To monitor active client connections, navigate to **System Configuration / System / Site / Clients**.

## 4. Domain

The Domain is capable of connecting multiple Sites so that they can be managed as a single integrated system. This allows access to and control over several different Sites.

The diagram visible on **the System Configuration / System / Domain** page shows the structure of the Domain, which is always hierarchical. A Domain can consist of multiple Sites, and the servers belonging to the Sites are placed in a shared rectangle for each Site.

The **System Configuration** menu lists the connected Sites, which can be accessed, modified, and monitored with the appropriate user permissions.

For the Domain to function, external addresses are required between the connected servers. Without these, the different Sites within the Domain will not be able to connect to each other.

To create a Domain, the servers of the Sites must have the IVS-Domain module. To check the current modules and licenses of the server, use the **Intellio Activation Tool** or refer to the **License** column on the **System Configuration / System / Site / Servers** page.

### 4.1. Domain expansion

During Domain expansion, a new Site is added to the Domain. Since the Domain has a hierarchical structure, when adding a Site, you must select a Site under which the new Site will be placed.

- Choose the Site under which the new Site will be added.
- Click the **Add Site** button.
- Enter the **external IP address** and **Port** of the master server of the Site being added.
- Enter the administrator **Login name** and **Password** of the Site being added.

The added Site will appear in the schematic diagram of the Domain and, after an update, in the left-hand **System Configuration** menu. To update, right-click on the name of the higher-level Site and select **Refresh**. If you right-click on the name of the added Site and select the **Connect** command from the displayed panel, the client will immediately log in to the added Site as well.

### 4.2. Site removal

To remove a Site from the Domain, select the Site to be removed from the schematic diagram of the Domain, and when the Site turns red, click the **Delete Site** button.

## 5. Virtual Site servers

By using virtual servers, the Domain structure can be better organized, for example, by grouping real or virtual Sites under them. This allows the creation of intermediate nodes in the Domain tree, making the organizational structure more accessible. Multiple virtual servers can be connected to the Domain.

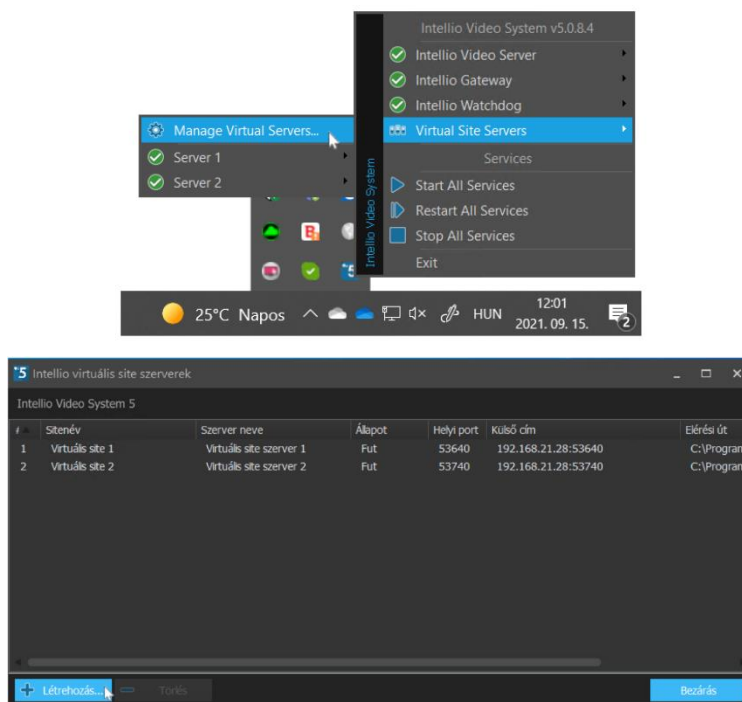
Virtual servers are not full-featured servers and do not have significant IVS functions, so no license is required for them. Missing features include Devices, Cameras, Storage, Alarms, and Accessories. Only the **Site**, **Domain**, **Security**, and **Map** functions are available.

Virtual Server requirements:

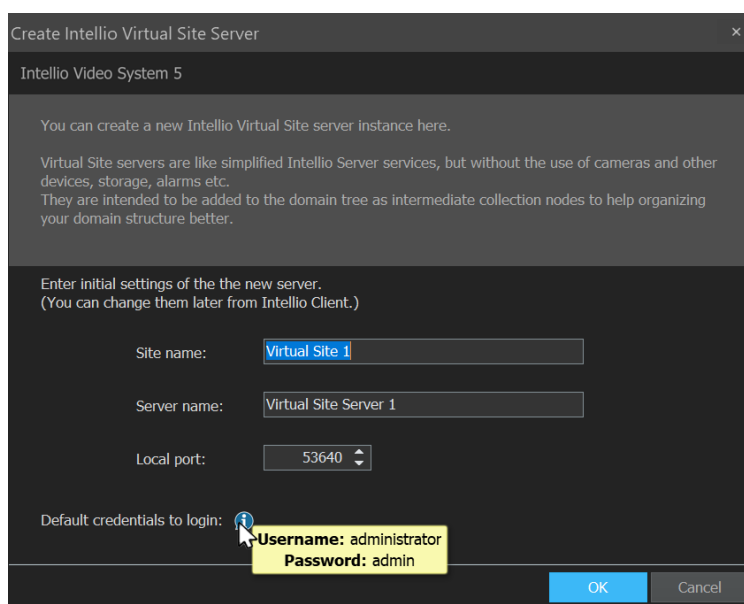
- They can only be installed on machines that already have a real IVS server running.
- The real server must have an Enterprise license for Domain integration.
- Each server instance on a machine must have its own TCP port (anything except ports 80, 53540, and 53541 can be used, but be aware of other default port numbers listed in the *Installation, initial settings* documentation).
- An external address must also be configured for them (each with its own unique external port).
- Only Intellio Client version 5.0.8 or later can connect to them.
- Virtual servers can also be connected to a Site, but within a Site, there cannot be a mix of real and virtual servers: a Site must consist entirely of either real or virtual servers.
- The highest-level Site in the Domain structure can also be a virtual Site.

## 5.1. Creating and managing virtual servers

The **Intellio Agent** program icon is located next to the clock on the taskbar (if it is not visible, click the "Show hidden icons" button or open the program's interface by launching the **Intellio Agent** program from the Start menu).



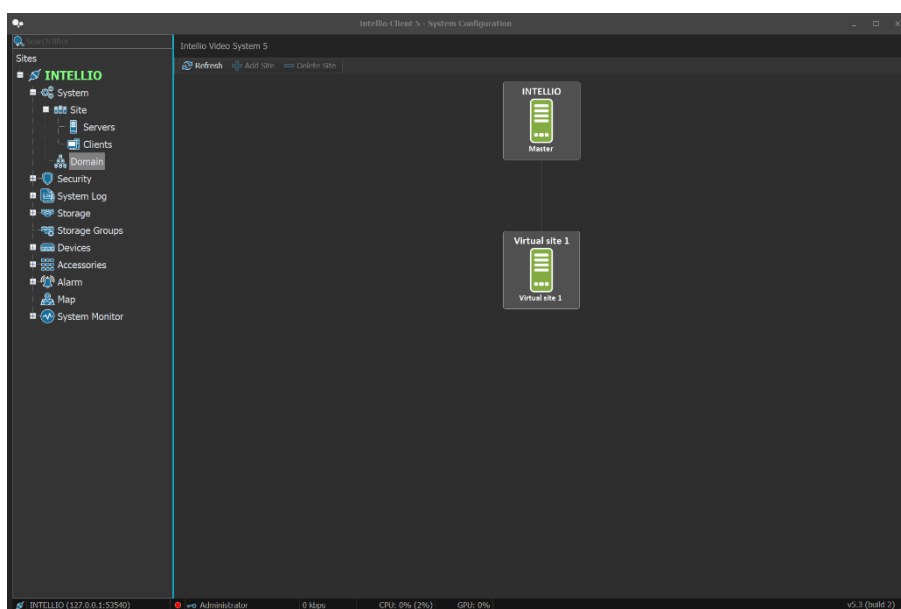
The list of virtual servers on the computer can be accessed in the **Intellio Agent** utility under the **Virtual Site Servers / Manage Virtual Servers** menu. This is where you can create or delete them.



After creation, you can log into the new server the **Intellio Client** program through the specified port (a new connection needs to be created in the client, where the **Network address** can be set as either the **localhost** name or the computer's IP address, and the TCP port should also be set – the same port that was configured when creating the virtual server).

The newly created virtual server forms a separate, independent Site from the other (real or virtual) servers running on the computer. Optionally, this virtual server can also be connected to a Site, but only with other virtual server(s) (which should ideally run on different machines). A Site made up of real servers cannot contain a virtual server, and a Site made up of virtual servers cannot have real servers added to it.

A Site consisting of virtual server(s) (virtual Site) can also be added to the Domain, but before doing so – just like with real Site servers – the **external address** must be set on all the Site's servers using the **Intellio Client**.



## 6. Further steps

For an overview of the system's additional settings, open the **IVS Installation Manual** documentation and continue with the system configuration by adding Devices and cameras.